

COMPUTER USE

Over 30 million computers are in use throughout the United States, and the number is growing rapidly. Growing as rapidly as the numbers of computers are the health problems associated with prolonged computer use. Those workers who use computers irregularly and intermittently throughout the workday are generally not affected by computer use. However, those workers who use computers continuously, from 6 to 8 hours during the workday, can experience computer-related ailments and discomforts.

Health Problems Associated with Computer Use.

The symptom most frequently associated with computer use is fatigue. Fatigue may be muscular, cognitive or emotional, visual, or a combination.

- Muscle fatigue is characterized by-
 - Pain.
 - Stiffness.
 - Physical discomfort.
- Cognitive or emotional fatigue is characterized by-
 - Weariness.
 - Loss of concentration.
 - Irritability
 - Dizziness.
- Visual fatigue is characterized by-
 - Eye discomfort due to prolonged, fixed focus.
 - Eye irritation.
 - Headache.
 - Abnormal after-image.
 - Blurred and/or double vision.

Whether computer workers are experiencing one or a combination of these problems, the results are the same - a loss in proficiency and productivity, and the occurrence of WMSDs, particularly as a result of muscle fatigue.

Assessing the Components of a Computer Workstation.

The components of a computer workstation are not separate units but should be considered an interactive system. The frequent complaints about discomfort from the use of computers typically arise from the way in which these components are integrated in the workstation. When you try to redesign the computer workstation, you quickly discover that a change in one component affects others. The best workstation design depends on the operator's anatomy, work habits, and the wide variation in tasks performed at a computer. The most important aspect of a computer workstation is "adjustability". The various components of the workstation (e.g., chair, work surface, monitor, etc.) should allow for adjustment to accommodate the needs of the operator and demands of the task. The following table is a quick reference to potential causes of operator discomfort and ways to eliminate or reduce the discomfort.

Causes and Quick Solutions to "Most Cited" Computer Operator Musculoskeletal Discomfort

Condition	Probable Cause	Correction
Neck upper back, and shoulder tightness, tension, or discomfort.	a. Head is too far forward during reading, writing, or viewing the monitor.	a. Elevate the work surface, reading materials, and monitor to keep the head and trunk relationship more vertical.
	b. Hands and arms are not supported while typing, inputting data, writing, or using hands in manipulating or holding work.	b. Use armrest, palm rest, or work surface to counterbalance and support the weight of the hands and arms. For typing tasks, allow the upper arms to hang naturally at the side and use palm rests or wrist rests.
	c. Head is too far back during reading, writing, or viewing the monitor.	c. Tilt the seat and backrest forward to keep the head and trunk relationship more vertical
	d. Leaning forward on the work surface and supporting the weight of the head and trunk.	d. Use chair and backrest as support instead of the arms. Lower the work surface to support the arms.

<p>Hand, wrist, and lower arm discomfort</p>	<p>e. Head and neck are tilted in a lateral direction holding the telephone between the shoulder and</p>	<p>e. Use a headset</p>
	<p>a. The wrist is deviated in an unnatural position.</p>	<p>a. Arrange the keyboard (or other input device) to produce a neutral wrist position. NOTE: A "neutral" position is the one the body naturally assumes. It is the least stressful, strongest, and most efficient position for the body.</p>
<p>Lower back pain and discomfort</p>	<p>b. Excessive force during typing/keying</p>	<p>b. Reduce excessive force through training and practice</p>
	<p>a. Lumbar curvature is not being maintained and supported.</p>	<p>a. Bring backrest in further horizontally through an in-and-out adjustment or by tilting forward and/or changing the lumbar curvature via air bag adjustment (if properly equipped). The backrest should be placed just slightly above the pelvis and should provide support in the lumbar region (lower back).</p>
	<p>b. Major thigh muscle is pulling on the spine because the feet are dangling or unsupported</p>	<p>b. Lower chair and/or use a footrest so that feet are supporting the weight of the feet and lower legs only. Backrest should be placed just slightly above the pelvis and should provide support in the lumbar (lower back) region</p>

Buttocks discomfort	c. Increased disc pressure because of vertebrae not having equidistant spacing. This results in stretching the muscle, tendon, and ligament system.	c. Open up trunk/thigh angle towards the neutral posture position.
	a. Sitting too far forward in the seat pan and not using the backrest.	a. Sit deeper in the chair. It may be necessary to adjust the backrest by tilting the angle.
	b. Pressure is too much on the buttocks (e.g., the bony parts of the pelvis where we sit).	b. Raise the chair height and increase the pressure naturally for the thigh. The back of the thigh should be touching the seat pan.